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TCT@ACC-i2: The Interventional Learning Pathway

SEQUENTIAL OPTICAL COHERENCE TOMOGRAPHY IMAGING POST PROCEDURE, AT 6, 12, 24 AND 36 MONTHS IN THE ABSORB COHORT B TRIAL: A LIGHT INTENSITY ANALYSIS TO ASSESS THE BIORESORPTION PROCESS OF EVEROLIMUS-ELUTING PLLA SCAFFOLD

Poster Contributions
Hall C
Monday, March 31, 2014, 9:45 a.m.-10:30 a.m.

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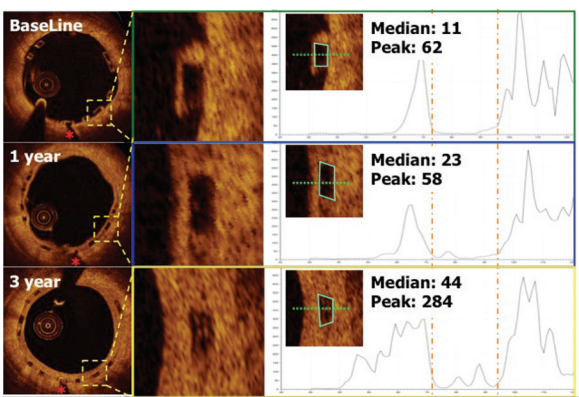
Background: After implantation of an everolimus-eluting poly-l-lactic-acid (PLLA) scaffold (Absorb BVS, Abbott Vascular), the polymeric struts are hydrolyzed and subsequently replaced by provisional matrix in 3 years. Preclinical studies demonstrated that Optical Coherence Tomography (OCT) by visual assessment is unable to distinguish polylactide from acellular provisional matrix, and is not sensitive enough to investigate the bioresorption process. The light intensity analysis of the strut enables us to quantify the light reflectivity of the scaffolded vessel walls. The aim of this study was to test this quantitative method on serial human OCT obtained at 6 and 24 months (cohort B1) or at 12 and 36 months after implantation of the BVS (cohort B2).

Methods: In 87 serial OCT pullbacks, corresponding struts in corresponding cross-section at different time points were matched by using anatomical landmarks. The region of interest (ROI) encompassing the corresponding struts was delineated visually. The median and peak values of light intensity within the ROI were measured by dedicated software.

Results: As shown in the table, the median and peak value of light intensity increased gradually both in cohort B1 and B2.

Conclusions: In the current analysis, the light intensity analysis was able to detect subtle changes in the bioresorbable strut appearance over time. The light intensity analysis on OCT therefore might be valuable for monitoring the resorption process of polymeric bioresorbable struts.



	Post Procedure	6 Months	12 Months	24 Months	36 Months	P
Median Intensity						
Cohort B1 (n=141)	14.0 [11.0 to 17.8]	18.0 [14.0 to 25.0]	–	25.0 [19.0 to 33.0]	–	< 0.001
Cohort B2 (n=162)	14.0 [11.0 to 19.9]	–	16.0 [13.0 to 20.0]	–	27.5 [20.0 to 40.3]	< 0.001
Peak Intensity						
Cohort B1 (n=141)	117.0 [79.0 to 194.0]	162.0 [112.5 to 279.5]	–	228.0 [162.0 to 393.5]	–	< 0.001
Cohort B2 (n=162)	131.0 [81.5 to 214.3]	–	206.5 [133.5 to 330.3]	–	265.0 [163.5 to 390.3]	< 0.001